



the

ILLINOIS ENGINEER

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DIAMOND CONVENTION-EXPOSITION

SPRINGFIELD, ILLINOIS

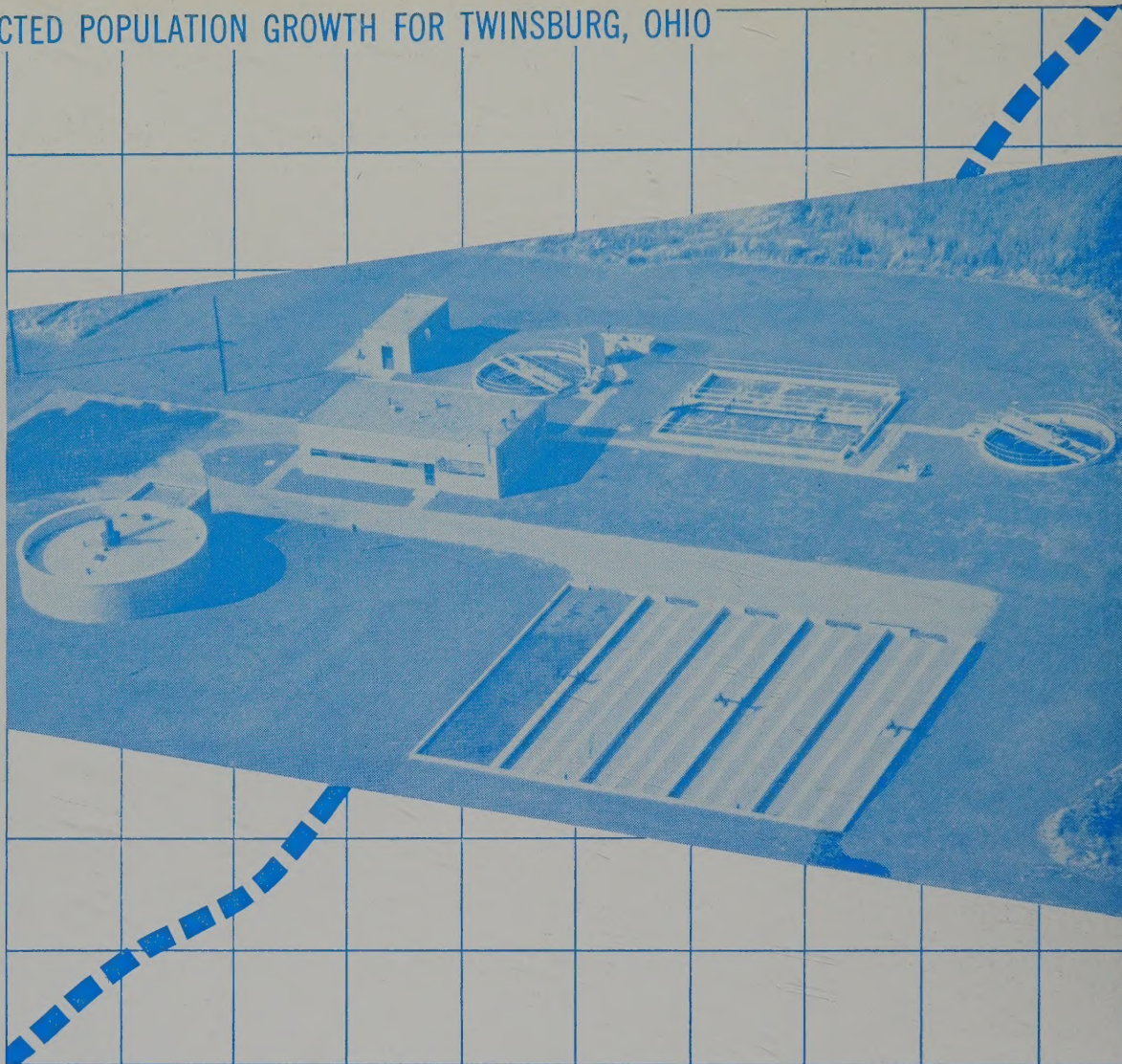
MAY 4-8, 1960

VOL.
XXXVI
No. 5

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PROJECTED POPULATION GROWTH FOR TWINSBURG, OHIO

6000
5500
5000
4500
4000
3500
3000
2500
2000



Twinsburg, Ohio plans ahead...

Twinsburg, Ohio, located between Cleveland and Akron, is an outstanding example of a small town which is planning for the future. The new Twinsburg Sewage Treatment Plant will provide for triple the present population.

Whether Twinsburg's population grows from its present 2,000 to 6,000 in a year or in ten years their sewage disposal requirements will be taken

care of. This kind of farsighted planning will help improve and conserve America's water supply. Willard F. Schade & Associates, Cleveland were the consulting engineers.

P.F.T. equipment at Twinsburg includes: one 45' Floating Cover, one #170 Heater & Heat Exchanger Unit (Gas Fired), one lot Gas Safety Equipment and one UFP Aluminum Roof Deck.

Waste Treatment Equipment
Exclusively since 1893



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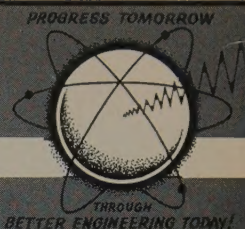
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THE ILLINOIS ENGINEER

ILLINOIS SOCIETY OF PROFESSIONAL ENGINEERS, Incorporated

Affiliated with the National Society of Professional Engineers



REPORT OF THE PRESIDENT FOR 1959-1960

The quickening pulse of I. S. P. E. has been felt throughout the year as the strength of over several hundred new members was added. It can be appreciated that a sizeable share of the Society's efforts has been devoted to the development of our "working tools." This is easily understood when it is realized that the membership is now about 175% of what it was just a few years ago. Nonetheless, the current program of the Society has been and is the most ambitious one ever undertaken.



D. S. Magowan, President

Legislative Advance

With the valued help of Vice President William Hooper, highly important professional advances were made. For example, the legislative leadership within our Society was demonstrated by I. S. P. E. during the last weeks of the 1959 Legislature. Backed by the Society, our Executive Director and committee representatives were successful in "spark-plugging" the combined action of eighteen organizations. This combined effort successfully helped to defeat a Bill which placed the administration of the Professional Engineering Act in jeopardy. Support was also given to constructive legislation. The impact of this has led to the

current planning for an aggressive I. S. P. E. legislative program for 1961.

Improved Fees and Salaries

I. S. P. E. adopted a supplement to its Fees and Salaries Schedule at the March Board meeting. The action improved the schedule for engineering on high-way maintenance work. In so doing, the Board demonstrated its flexibility and also its policy to consider worthwhile professional changes whenever presented.

The Ethics and Practice group processed investigations referred to it by the Board, and reports of that valuable committee are a matter of record. It is understood, of course, that the rulings and findings of this committee act as a professional guide. The work on Ethics and Practice, as well as that dealing with Education and Employment Practices, is greatly valued.

Public Relations — A Major Theme

The Diamond Jubilee Exposition is a bid for public attention to the importance of engineering. A great amount of important Society time and effort has been injected into this effort because the event marks an important "milestone" in I. S. P. E. history. Contributions to this have come from I. S. P. E.'s friends in industry in many areas. I. S. P. E. is grateful to them and to the tremendous member effort that has made

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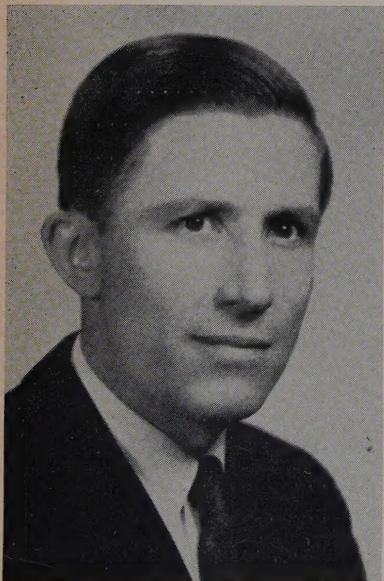
OFFICERS FOR 1960-61



L. D. Hudson, President



Manuel Garcia, Vice-President



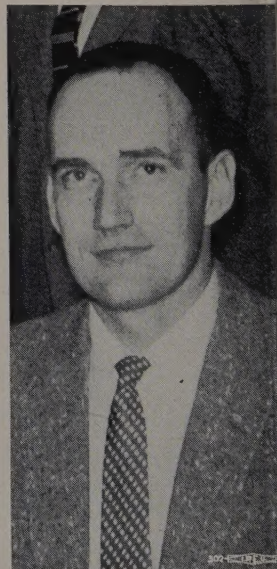
Linas Brown,
Vice-President



Harold Sommerschild,
Vice-President



John Housiaux,
Secretary



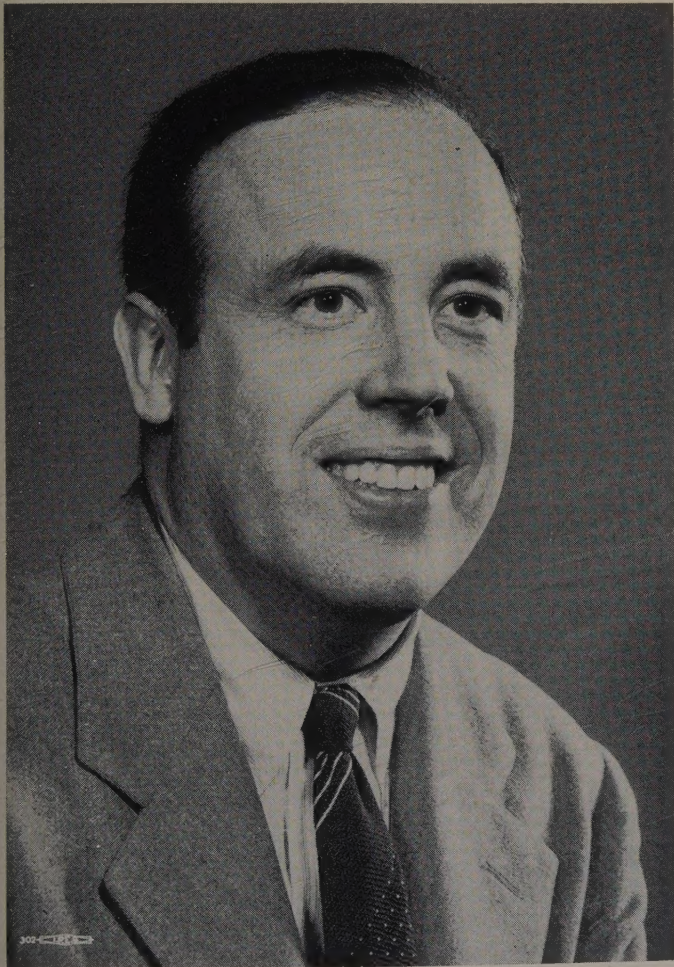
R. Dean Collins,
Treasurer

EISENHOWER AIDE CONVENTION SPEAKER

MERRIAM REPRESENTS WHITE HOUSE, MOSHER SPEAKS FOR N.S.P.E.

ROBERT E. MERRIAM

Robert E. Merriam of Chicago took office as Deputy Assistant to the President for Interdepartmental Affairs on September 10, 1958. Prior to his appointment to this post by the President, he had served in several capacities with the U. S. Bureau of the Budget since August, 1955, being its Deputy Director immediately prior to his present position.

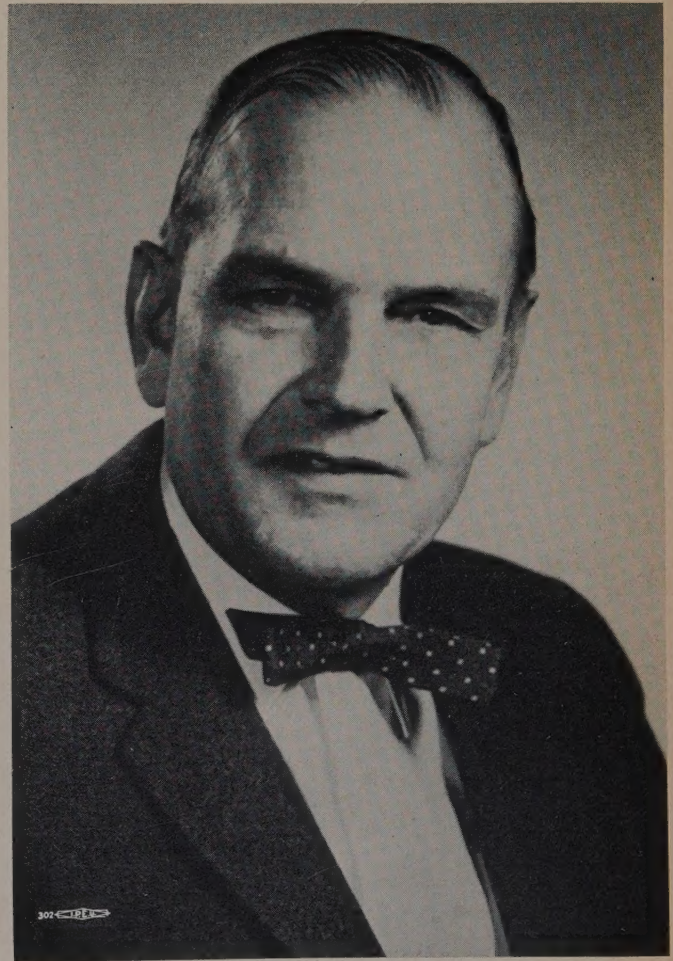


Robert E. Merriam

Mr. Merriam was Republican candidate for Mayor of Chicago in 1955, and was a member of the Chicago City Council from 1947 to 1955, where he was chairman of several important committees. He served in the Army from 1942 to 1946, during which time he rose from the rank of private to captain. Immediately prior to his election to the City Council, he was Director of the Chicago Metropolitan Housing Council. Prior to and just

after the war he was employed with various civilian Federal agencies.

Mr. Merriam was born in Chicago on October 2, 1918. He received an M.A. degree in public administration from the University of Chicago in 1940. He is the author of several books and numerous articles in the field of government, has taught at the University of Chicago and Northwestern University, and has served as consultant on governmental matters. He is also the author of *The Battle of The Bulge*, an account of the last great German attack in World War II. He is married and has three children.



HAROLD A. MOSHER

Harold A. Mosher, of Rochester, New York, president of the National Society of Professional Engineers,

is assistant director of engineering for the Eastman Kodak Company at Kodak Park, Rochester. He was born in Oklahoma City, Oklahoma, in 1907. After receiving his degree from Occidental College at Los Angeles, California, he joined the engineering technical staff at the Bell Telephone Laboratories in New York City. Following further experience with the Engineering Staff of Consolidated Film Industries in New Jersey, he joined the staff of the Eastman Kodak Company rising to his present position.

He has served as president of his local chapter, a member of the Board of Directors of the New York State Society of Professional Engineers and the National Society of Professional Engineers, and is currently serving a term as vice president of NSPE for the Northeastern region. He was chairman of NSPE's Membership Committee during 1957-58.

Mr. Mosher is a member of the American Society of Mechanical Engineers and other organizations.

PAUL H. ROBBINS

Paul H. Robbins, Executive Director of the National Society of Professional Engineers, was born in Syracuse, New York.

He is a registered professional engineer and holds degrees from Syracuse University and the Massachusetts Institute of Technology, and has engaged in graduate work at Columbia University for his Ph.D. degree.

After field experience in highway design and layout, he became associated with the Pittsburgh Bridge and Iron Works, leaving there to join the engineering staff at Cooper Union.

He has also taught at New York University and the University of Maine.

In 1941 he went in the executive office of the Mayor of the City of New York as full-time consultant on engineering training. He also served the City as expert examiner in engineering work.

With the activation by the Army of the New York Port of embarkation, the principal east coast port through which men and material were funneled to the European and Mediterranean War Theaters, he assumed the duties of director of training.

The chief transportation of the Army, under whose command the New York Port operated, sent Mr. Robbins to all ports of embarkation in this country as his representative to consult with commanders of these installations on all phases of management, organization and the utilization of personnel.



Paul H. Robbins

Mr. Robbins is married, has two children, and lives in Silver Spring, Maryland.

He is a member of Tau Beta Pi, Sigma Tau, Phi Kappa Phi, Delta Sigma Rho, American Society for Engineering Education, Society of American Military Engineers, American Society for Photogrammetry and Rotary International.

He is director of fellowships for Tau Beta Pi, a member of the Advisory Committee of "Who's Who in Engineering", and member of Board of Directors of JETS (Junior Engineering Technical Society).

He served as advisor to the Task Force on Utilization of Scientists and Engineers and was a member of the Local Action Task Force of the President's Committee on Scientists and Engineers.

D. S. Magowan, out-going President of ISPE, has been announced as 1959 recipient of the **Illinois Award**. The award is given by the ISPE for outstanding contributions to the Engineering Profession.

I.S.P.E. President's Annual Address, 1894

*Gentlemen of the Illinois Society of
Engineers and Surveyors:*

A hasty reading of the proceedings of the affiliated societies received by us in exchange, has satisfied me that the stock of raw material for Presidents' Annual Addresses is entirely exhausted. An expiring president has not a word left to say, except to unburden his soul of its load of official sins of omission and commission, and throw himself on the mercy of the court.

The recent engineering achievements have been duly listed and lauded; the dignity of the engineer has been set forth, the duties and responsibilities of his profession justly weighed and balanced. The engineer has been complimented as an all-round man, and he has been magnified fully as many diameters as is consistent with the stability of his sphere.

I must not wear you with the telling of twice told tales. Let me then follow the policy of the Government in an issue of bonds, and create an obligation on the future for posterity to pay or repudiate as it may.

I want to anticipate your president for the year 1944, and give the possible substance of his address for that year as follows:

January, 1944

*Gentlemen of the Illinois Society of
Engineers and Surveyors:*

"I congratulate you on the great increase of our membership and the enlarged influence of our society. I see on the screen before me the well known faces of nearly all of our thousand members, and your respectful and eager attitudes as you sit in your easy chairs, in your respective offices, leads me to infer the great interest you feel in our proceedings.

Fifty years ago an attendance upon our annual meeting, as upon any convention, involved a journey of greater or less length, and an inconvenient absence from home, and a sojourn at a hotel, where, tradition informs us, the laboratory for organic analysis was unknown, and the cook was never a practical chemist. Allowing much for the great increase of scientific study and of the number of students, most of the credit of this increased attendance is doubtless due to the present system of telephonic, telepathic, telescopic communication, by which we are now able to project our visible and audible bodies to any distance without change of place. A convincing proof of this is in the enormously increased church attendance, when such popular preachers as Professor Chrysostom not unfrequently addresses 20,000 eager listeners and observers scattered over the whole country.

I have heard my grandfather say that, up to the

later years of the nineteenth century, when actual physical presence was still necessary to one who would hear, see and be seen, the attendance at a church rarely exceeded a few hundred. The ancient records of our society inform us that, under the secretaryship of our venerable friend Bullard, still hale and active under the lightly borne load of his hundred summers, whose telepathic hand I now grasp over the wire, the attendance never exceeded thirty.

There are occasions and needs for which presence by wire does not yet suffice, and there is still necessity for travel; but this is a slight inconvenience since the vast ameliorations in transportation which modern science has effected. We need no better authority than that of our venerable friend Bullard, whose memory is still unimpaired for the statement that as late as 1894 the speed of railway trains rarely exceeded forty miles an hour, and that suburban trains with their stops averaging a mile or two apart, moved not over sixteen to eighteen miles an hour. It is necessary to explain to my younger hearers, that in those ancient times every train had to be brought to a full stop at every station where passengers had to be landed or taken; so that in a journey of twenty miles more time was often lost in stopping than in moving. The old text books indicate that the first hint of a remedy for this enormous loss came from the Columbian Moveable Sidewalk, an endless platform moving at such a rate that a passenger could easily step upon it from the ground and from it successively to others, whose rate was accelerated. (A curious invention first practically applied at a great Fair held in Chicago about fifty years ago.) From this hint the successive steps easily followed in the transfer of passengers from the ground to rapidly moving trains and vice versa. But perfection was not reached until the invention by Professor Vortex of the Automatic whirlwind, a dense atmospheric current generated by the displacement of the air by the train and moving along with it, upon which the way passengers, with their bodies and effects properly levigated, step and are easily and safely landed.

On the road with which I am connected, trains running a few minutes apart traverse the whole length of the city of Chicago, from its Southern limit at the confluence of the Ohio and Mississippi to its Northern Ward, formerly an independent town laid down in the ancient maps as Milwaukee, in less time than the trains of '94 took to traverse a tenth of the space. We shall soon realize the jesting words of an ancient writer, long since obsolete, and put a girdle around the earth in forty minutes, or less.

Electricity plays so great a part in the civilization of the twentieth century, so ministers to the ease and comfort of life, that it is only by drawing sharp contrasts between this and earlier times, that we can realize its benefits. Project yourselves back for a few minutes

by the aid of old books and the newspapers of the day, and try to live an hour, if you can do so without asphyxia, in the stifling air of the 19th century. There were indeed, railroads, telegraphs, telephones, some imperfect electric apparatus and some rudimentary sanitary science, but the trains were crawling at forty miles an hour; telegraphs were but halting modes of communicating though, often interrupted and rarely clear; the use of electricity was limited to poorly controlled lights and uncertain motive power; and the little then known of hygiene was not reduced to effective use. Houses were dimly lighted by an ill-smelling, poisonous gas, and heated by the combustion in iron boxes of a sooty mineral, the fumes and dust from which were tolerated only because the people knew nothing better. Now the electric conductor brings cheerful light, genial warmth, gigantic force, the intelligence of the world, into every home. It lengthens and glorifies human life. And this beneficent force is as free and cheap as the air we breathe, the sunlight we absorb. Fifty years ago it was generated through heavy machinery by costly methods. Now by a simple process of induction electric currents of any required quantity and intensity are drawn at will from that vast storage battery, the earth itself, to be returned thither when its task is done. Not only has the cost of sustaining human life been very greatly reduced, but new possibilities of comfort and enjoyment hitherto undreamed of, have been opened to the race.

Old traditions tell us of the army of the unemployed, the homeless thousands, who in the dark year 1893, walked the streets of the cities by day, and at night lay down to such rest as could be got in the halls and corridors of public buildings. There was plenty of work to be done, there were these thousands of willing hands to do it, but the imperfect economics of that day were powerless to bring work and workers together.

Most of the world's work was done by great monopolies, who owned the water powers and the land, and who controlled the capital required for making great steam plants. Individual employment depended largely on these great companies. Now every man with active brain and skillful hand becomes the yoke-fellow of the earth on which he lives, taps its sources of power, and becomes a factory or machine shop in himself.

No doubt a large part of the present nice adjustment of supply to demand, in all departments, is due to the labors of the National Bureau of Statistics. Something of this sort was attempted in the last half of the 19th century, by the U. S. Census Bureau; but the work was crude, and at best covered only part of the ground, by an enumeration taken once in ten years, and was of but little practical use in specific localities. We have an illustration of this in that same great World's Fair held in Chicago half a century ago, whose glories still shine in the traditions of that far away past. Hundreds of hotels and lodging houses were built in its neighborhood

to accommodate the expected millions of visitors. Nearly all of them proved failures, disastrous to their owners, simply because no one projector knew how many others were doing or intending the same thing; and no one had the means of even roughly forecasting the number of probable guests. There was no harmony of action, and the market was vastly overstocked.

The lamentable overcrowding of certain professions and trades in those days, and the mal-adjustment of the total number of houses, tenements and stores to the number of tenants, was due to the same cause, the lack of that knowledge of the general movements which is the only safe guide for individual activity.

In these latter days we have ceased to act so blindly. The population of each village, farm, town, city, and the number of workers in each department of industry, is always accurately known; we know the quantity of raw material and finished product on hand or in process of production, the area of land planted to different crops, the number of houses, and in short, all the facts necessary to determine the action of each individual in any undertaking. Does a capitalist propose to build houses or flats for rent; is a farmer in doubt whether to sow his field to oats or barley; is a father puzzling his brain as to whether Young Hopeful, just out of high school, shall be sent to the law school, or apprenticed to a shoemaker? He telephones to the Bureau of Statistics of his County and instantly the knowledge of the world is at his disposal for his guidance in the matter. So we avoid, if we are wise, those dismal mistakes into which the forefathers were constantly betrayed by the lack of these essential facts.

I must not omit to mention among the ameliorating influences of our time the use throughout the whole world of the Metric system of weights and measures. Accustomed as we are to the simple units in which all quantity is now expressed, we find it hard to project ourselves back into the dark ages of fifty years ago, when the number of units of quantity was so great, and their inter-relations so intricate, that a life study hardly sufficed for its mastery, and the wonder is increased when we are asked to believe that the system was not international, nor even uniform throughout the same country, and that the factors for reducing one denomination to another were frequently expressed in six figures.

Our venerable ex-Secretary Bullard, of whose admirable services to our society I cannot too often remind you, could tell a moving tale of the dark cloud of pounds, ounces, pennyweights, avoirdupois and troy, of miles, furlongs, acres, rods, gills, pints, gallons, wine and beer, that darkened his childhood hours, and his eyes flash with the fires of youth, as he tells how his great-grandchildren, under our better system, accomplish in a week what he failed to do after a labor of his best years.

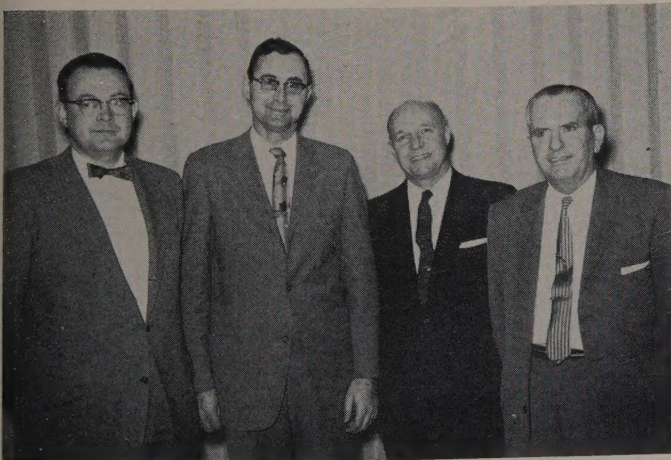
But enough of these contrasts between those darker times and the happier halfway station of the 20th cen-

tury. They become alternately sad, as we try to sympathise with the bare lives and wasted energies of the race in 1894, and cheerful as we mark our own happier lot. But our self-gratulation may well be tempered by the thought that those who are to come after us will probably cast the same pitying glances back at us, through the gathering mists of half a century, as we are now casting at these ancient men."

I have here foreshadowed the annual address of the fiftieth in the long line of fortunate men who are to succeed me in this chair. Have I overdrawn the picture of probable moral and material advancement? May we not feel sure that the real chronicle of that future day will be more startling in its details than anything we can now fancy. It is not certain that in the coming half century many brilliant discoveries will flash upon the world, of which we in our blindness no more dream than did the Pilgrim Fathers of the Railroad or the Telephone?

Columbus could see a new world long before he had the means to discover it; but he could not anticipate a splinter tipped with latent fire nor a race of women sewing with their feet.

These new illuminations will surely come, but not of themselves, nor as the happy inspiration of some genius more fortunate only than his fellows. They will be the outcome of years of patient, unrequited, unseen toil, in the laboratory, in the field, at the desk. The magic ring of Rhein gold was slowly and painfully wrought by the Gnomes in subterranean caverns, that it might sparkle on the hand of Siegfried, the hero in love and war. Let us labor like the Gnomes, each in his separate place, without thought of self, content that some unborn Siegfried shall one day win and wear the honor for us all. The uplifting of the race is the true glory of the individual.



Mr. Pete Wisely, A.S.C.E. Executive Secretary, was speaker at the April meeting of Central Illinois A.S.C.E. chapter. Shown are, left to right: Clyde Kesler, President; John D. Haltiwanger, Secretary-Treasurer; Wisely, and Henry Scheer, Vice-President.

(Continued from Page 1)

the Exposition possible. Vice President Manuel Garcia has been a great help in coordinating most of the public relations activities.

Publications Committee actions have been reflected in the Directory Issue of the ILLINOIS ENGINEER. The current program to build this publication continues to be of priority importance.

A Planned Future Ahead

I. S. P. E. can look ahead to a further step-up in many activities during 1961 as the result of planning during this past year. Long-range objectives for the Society were studied by the Budget and Finance Committee and these were published in the October issue of the ILLINOIS ENGINEER for review and discussion. The membership approval of these objectives was given by the last ballot. Not only will the Society have the benefit of the planning for the future, it will have a very important budget ability to support the action. While it is recognized that chapter activities along with N.S.P.E. are at the heart of professional dedevelopment, I.S.P.E. will be in a position to add material strength to this development.

It is a pleasure to acknowledge the great amount of work contributed by over 150 members of the Administrative, Special, and Standing Committees and by members of the Board.

Respectfully Submitted for
President D. S. Magowan
By L. D. Hudson, Acting President

ENGINEERS HONOR VAN PRAAG WITH LIFE MEMBERSHIP

Alex Van Praag, Jr., of 402 Southmoreland Place, was recently honored with a life membership in the American Society of Civil Engineers.

The award was presented during the annual ladies night meeting of the Central Illinois section of the Society of Professional Engineers in Urbana.

The award was presented by J. R. Gardner, an associate engineer with Warren & Van Praag, Inc., consulting engineers.

Van Praag, president of the engineering firm, is a past president of the National Society of Professional Engineers and the Illinois Society of Professional Engineers.

He is the chairman of the water resources committee of the Illinois State Chamber of Commerce.

A 1917 graduate of the University of Illinois, Van Praag is listed in both "Who's Who in America" and "Who's Who in Engineering."

FOUNDERS OF I.S.P.E.



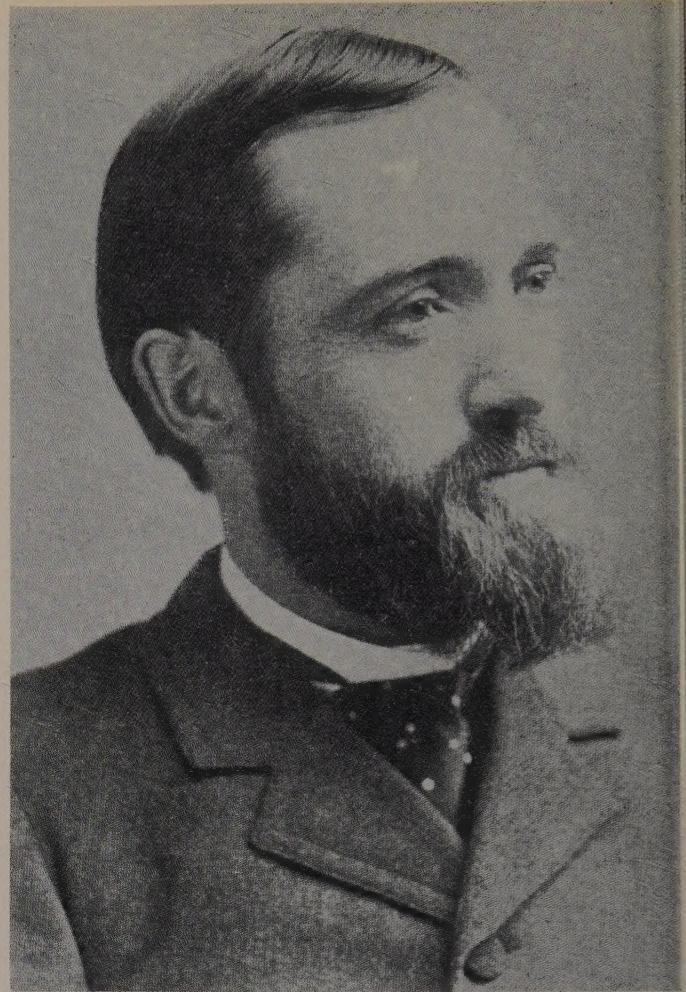
Professor A. N. Talbot, Secretary

I.S.P.E. HISTORICAL NOTES SHOW STEADY GROWTH

On February 10, 1886, thirty engineers and surveyors assembled at the University of Illinois in Urbana, which was the first meeting of the Illinois Society of Engineers and Surveyors, now known as the Illinois Society of Professional Engineers. President of the parent engineer organization was Professor I. O. Baker, of Champaign; Vice President, Daniel Gordon, Moline; and Secretary was A. H. Bell, Bloomington.

From this group of 30 the Illinois Society of Professional Engineers has grown to a membership of approximately 4,000 engineers throughout the State of Illinois, and the Society is affiliated with the National Society of Professional Engineers, which is an organization of 52 state and territorial organizations.

The object of the Association was: "The encouragement of professional improvement and good fellowship among its members by meetings for the presentation and discussion of papers on scientific or other topics and the discussion of such other subjects as may be of interest to its members; the publication of such parts



Professor I. O. Baker, President

of its proceedings as may be deemed expedient; and the collection of books, maps or other articles of value to the engineering profession." Today the original objectives have been magnified and the Society serves the public and all fields of engineering on matters of mutual professional interest.

During the four years after its founding the Society met in annual meetings in Champaign-Urbana, Springfield, Bloomington and Peoria. The membership climbed to 95 including three honorary and one associate member. Annual reports were published and reports of committees, president's addresses, and technical papers which cover a wide variety of subjects. For example, one paper is titled, "Sources of Water Supply" by D. W. Mead; another is titled, "Race Track Problem" by D. H. Davison.

By 1900 the Society's membership had increased to 119 members including one honorary member and no other grade of membership. The interest in the Society as much greater than its number of members indicates. Sixteen hundred copies of the Annual Report were sold at 50 cents per copy. In the ten-year period annual meetings were held in various cities over Illinois and the annual reports show a continued in-

terest in technical papers. In the fourteenth annual report there is quite a lengthy paper on the construction details of street railways. Also, there is a report of the committee on paving brick.

The 1910 roster listed 226 members including 5 honorary members. The ten-year period between 1900 and 1910 brought one radical change to the Society. On April 5, 1904, the Society was incorporated by the State of Illinois under its original name—the Illinois Society of Engineers and Surveyors. The papers of the Society show a growing interest in the use of concrete for everything from roads to monuments. The papers continued to be published annually and the meetings were held each year in various cities from Chicago to Cairo.

The annual report for 1920 enumerated 282 members which included 36 affiliates. This roster shows no listing of honorary members; however, in the previous years all of these honoraries in previous lists were deceased and apparently no new one had been elected. During this period one student membership appeared for the first time. Among the papers published, many deal with road construction and flood control. There are two papers on wood block paving, and one by a newcomer, Harold E. Babbitt, entitled "What a City Can Afford to Spend" (on sewerage systems).

By the end of 1930 the membership had climbed to 472 and an intensive drive was begun with a goal of 1,000 members. New departures were initiated during the 1920-1930 decade. Professor Babbitt finished a one-year term as President in 1923 and became Secretary in 1924, and with the exception of a leave of absence in the winter of 1929-30 he has served as Secretary until 1953. In 1924 the Society members began receiving a monthly bulletin which became the **Illinois Engineer** in February, 1925. One of our founding fathers and first president, Ira O. Baker, died in 1925; another charter member, Professor A. N. Talbot, was made the only honorary member of the Society in February, 1926. The original emblem was adopted in 1926. The annual meeting and papers were published in conjunction with the Wisconsin and Iowa Societies. On March 3, 1928, the Board of Direction proposed a change in the Constitution to permit "Branches" of the Society. The Madison-St. Clair Branch Charter was issued on September 29, 1928. Not too long after this, the first Rockford Chapter was formed. The Society was gradually focusing its attention on the professional and economic problems of its members rather than the purely technical. The emphasis on professional and economic problems was accelerated with the formation of new Chapters. Also, with the change in point of view came the recognition of the need of registration of the engineer by the State. The Illinois Society did much of the detail work in connection with the introduction, passage, and attempted enforcement of the original Act. When the Act was found unconstitutional, the Society went back to work on a Bill which

is now the law of the State and has never been successfully attacked.

In the 1930-40 decade, the National Society came into existence; New York, New Jersey, Pennsylvania, Connecticut and Illinois joined forces in 1934 with a total membership of 2,800. Since that time the National Society has grown to about 52,000 members with 52 affiliated State and Territorial Societies.

In the Illinois Society during the '30 to '40 decade we celebrated our Fiftieth Birthday in 1936. Two members were honored for their 50 years of membership in the Society, Professor A. N. Talbot and A. H. Bell. In 1931 the Constitution was revised on membership grades and Associate and Junior grades were created. The grade of Student had been established some years before but had never been used to any extent. This could be called the decade of trial and tribulation. The Society suffered financial losses through the closing of the banks and it endured membership losses due to the depression but it pulled its belt up another notch and marched forward in spite of all obstacles.

From 1940 to the present time (1946) your Society has been active in the formation of new Chapters. The Corporation was certified as a "not for profit" corporation in 1944. The name was changed again on April 15th, 1946 to the Illinois Society of Professional Engineers.

During this period of development the Illinois law licensing engineers was signed on July 20, 1945.

At the close of the 1940-50 decade the number of chapters had grown to 16 and the total membership to 1,808, a net gain of 86 members for the year 1949.

The period between 1950 and 1958 brought an increase in the number of members from 1,808 to 2,075, a net gain of 267.

Throughout the history of the Society the subject of increased membership and what could be done to attract more members was ever evident. At the time of Secretary Babbitt's retirement from office in 1953 the Illinois Engineer published this comment;

"Impatience has been shown at the apparently slow rate of Society growth. Such impatience indicates an enthusiastic membership and is commendable and proper."

"Of course, we all hope that the Society will progress at an accelerated rate during the next third of a century. But we need have no fear for Society soundness if we accomplish as much during that period as we have during Secretary Babbitt's regime."

Those words have indeed proven prophetic if the progress of the Society, in the few years since they were published, may be considered a fair yardstick. Utilizing the solid foundation constructed by the members and officers since 1886, the growth of the Society in the past two years is phenomenal, representing the greatest progress in its 75 years.

(Continued on Page 10)

(Continued from Page 9)

In contrast to the increase of 267 members in the 8 years prior to 1950, the Society has shown a net increase of 1,285 members in two years. At the time of this, our Diamond Jubilee, the total number of members stands at 3,379.

Six new chapters have been added during those two years, bringing the total to 22. Most notable in this direction was the decentralization of the Greater Chicago chapter into five separate chapters. This move proved so popular that many eligible professional engineers who found it inconvenient to travel to the Loop became members of the ISPE and are now attending regular chapter meetings. The result was an overall increased membership in the Chicago area.

Along with the Society's growth in membership goes a noticeable increase in its prestige as an organization representative of the professional engineer in Illinois. This has been most apparent in the field of the Society's legislative activity which, in the two years from 1958-60 has been the most aggressive in the Society's history. Through a program of constant vigil and research regarding legislative matters and other contemplated changes pertaining to engineering, the Society's representatives are constantly on the alert to guard all interests of the professional engineer.

This accelerated policy of more and more service to the members it serves is contributing materially to its growth by making the Illinois Society of Professional Engineers increasingly attractive to prospective members.

If the pace of progress attained in the last two years can be maintained—and that depends on the membership—it does not require the use of a slide rule to calculate the position of the ISPE in the "next third of a century."



A new Ladies' Auxiliary for Capital Chapter was the outgrowth of convention activities. Officers elected are: Standing, left to right, Mrs. Ralph Hahn, Secretary; Mrs. Arthur Kessell, President; Mrs. Charles Ritchie, Vice-President; and Mrs. William Russell, Treasurer. Board members, seated are, left to right, Mrs. Jack Finley, Mrs. L. D. Hudson and Mrs. John E. Sharp.

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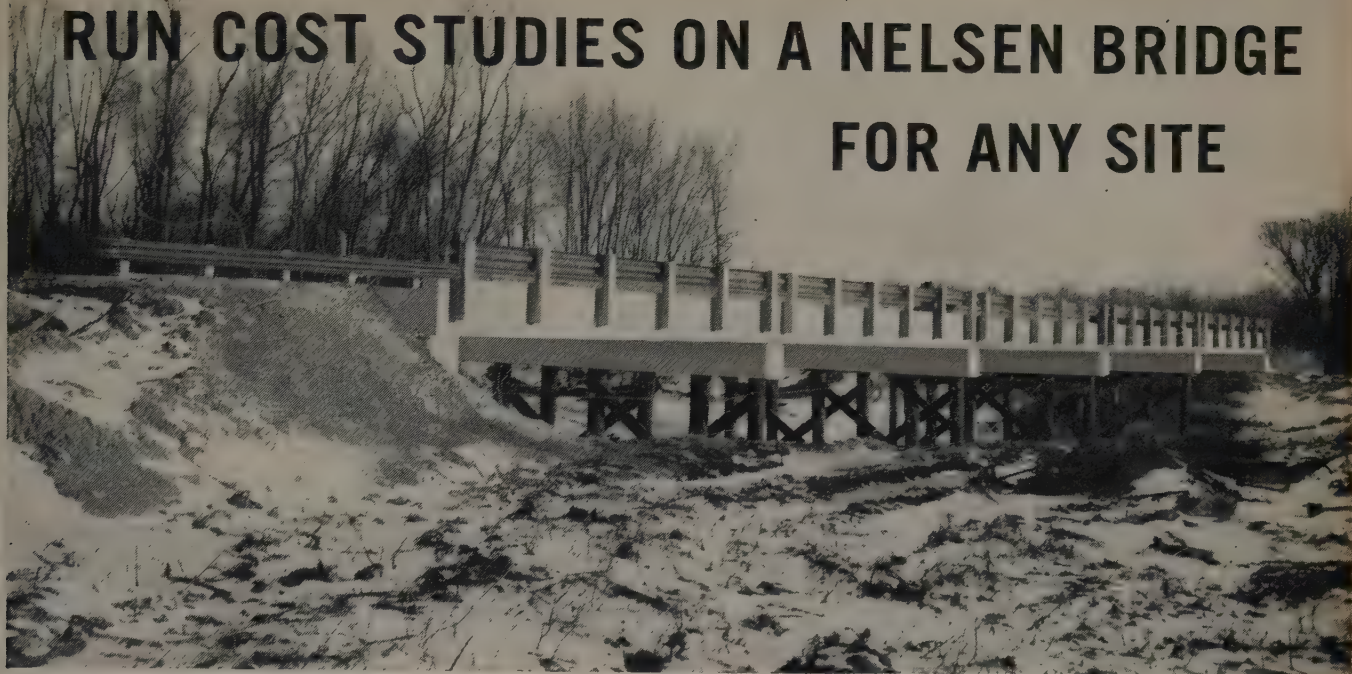
SPRINGFIELD — ILLINOIS



Robert Ruthrauff, manager of Applied Programming, International Business Machines, will speak to Thursday Luncheon, May 5, on the latest techniques in electronic data processing.

An Invitation...

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WHEN you're designing a bridge, you're necessarily interested in structural strength and costs. *Nelsen Concrete invites you to check its standards and to run cost studies on a NELSEN Bridge for any site.* You'll also be sure of fast service when you recommend a NELSEN Bridge — posts, piling, caps, slabs, and rails are always available in standard sizes from stock. If there are special problems, Nelsen Concrete will meet your requirements with custom precasting for bridges or for any other building needs.

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LADIES' PROGRAM

WEDNESDAY, MAY 4

7-10:00 p.m.—Registration—St. Nicholas Hotel Lobby
Hostesses in Hospitality Room 433-439

THURSDAY, MAY 5

8:30 a.m.—Registration—St. Nicholas Hotel Lobby
8:30 a.m.—Coffee Hour—Hospitality Room 433-439
10:30 a.m.—Lincoln Shrine and Antique Shop Tours, Exposition at State Armory
(Register in Hospitality Room 433-439)
1:00 p.m.—Luncheon at the Lake Shore Country Club (Bus leaves St. Nicholas Hotel at 12:30 p.m.)
Program—Norman Bullard will entertain with Folk Songs
3:00 p.m.—Bus Tour of Lincoln Memorial Garden and Springfield residential area
5:30 p.m.—Social Hour with men, Springfield Room, St. Nicholas Hotel
6:30 p.m.—Buffet Dinner and Millionaire Party, Ball Room, St. Nicholas Hotel

FRIDAY, MAY 6

8:30 a.m.—Registration—St. Nicholas Hotel Lobby
9:30 a.m.—Early Bird Chatter, Hospitality Room 433-439
10:30 a.m.—Brunch at the Hotel Governor
Program—The Hat Lady from Dwight
2:00 p.m.—Tea at the Governor's Mansion
6:00 p.m.—Cocktails with men, Springfield Room, St. Nicholas Hotel
7:00 p.m.—Banquet and Dance—St. Nicholas Hotel Ballroom

N.S.P.E. ANNUAL MEETING JUNE 8-11

Massachusetts, hub of engineering research, will host the 26th Annual Meeting of the National Society of Professional Engineers, June 8, 9, 10, 11, at the Hotel Statler Hilton in Boston. Walter J. Kreske, president of the host State Society, announced at a convention committee meeting.

"We are extending a hearty invitation to the 60,000 members of the National Society of Professional Engineers to attend the 1960 four-day meeting to be held here," Benjamin Mills, Jr., of Needham, Chairman of the Convention Committee, reported. "Twenty-five per cent of exhibit space already has been reserved following the first notices sent out."

Registration will begin Wednesday morning, June 8, followed by luncheon session with national authorities as speakers. Plenary sessions on "Trends in Engineering"; the engineering problems in a "Rapidly Expanding Economy" will be held Thursday, Friday, and Saturday mornings. Final plans for afternoon sessions have not been culminated at this time.

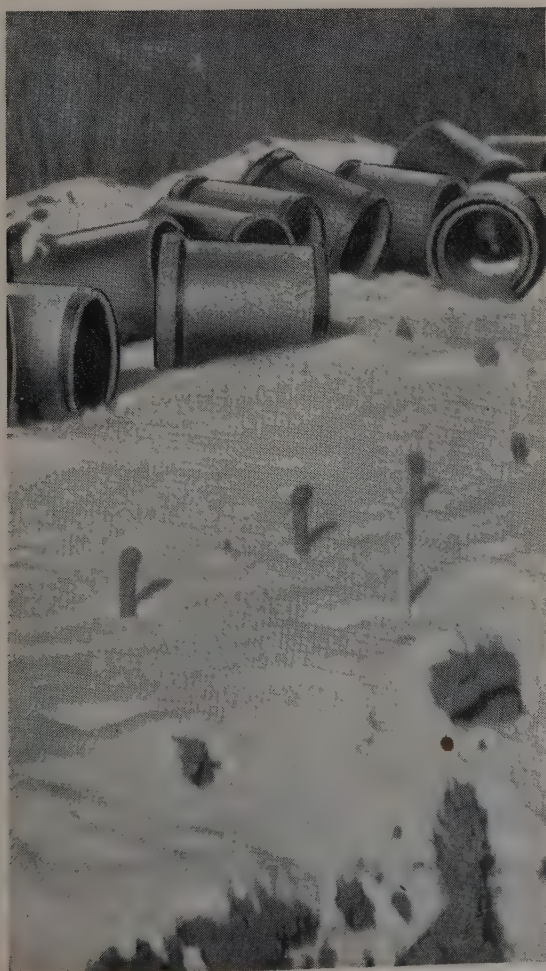
"Along with our neighboring New England states—Connecticut, Maine, New Hampshire, Rhode Island and Vermont—co-hosting the impressive program, we prom-

ise the nation's registered professional engineers a real New England welcome," Mr. Kreske said.

"Plenty of Boston Baked Beans at the Wednesday evening dinner, Pops Concert at Symphony Hall on Thursday evening, an old fashioned New England Clam Bake at Nahant Shore on Friday, winding up with the Annual Banquet, Saturday evening—with dancing and entertainment."

New England has a high per capita population of registered engineers and through its magazine the *New England Professional Engineer* hopes to attain a record attendance at the June meeting. A real bid is being made for the visiting engineers to bring their families to make this a vacation trip as well as an educational and informational treat. Registering engineers may win a free, all-expense, four-day trip to Bermuda for two sponsored by the Massachusetts Society.

"As president," said Mr. Kreske, "I am fortunate in having a very cooperative committee chairmanned by Mr. Benjamin Mills, Jr., and working with him Walter J. Hickey, John M. Bartlett, Jr., and Donald C. Howard, Executive Secretary of the Massachusetts Society of Professional Engineers for the National Society."



Army Corps of Engineers Specifies...

Streator's New Amvit Jointed Sewer Pipe

When 1,000 feet of extra-strength sewer pipe was needed on the Army's "Flood Control Project" on Mad Creek near Muscatine, Iowa, the Corps of Engineers selected *Streator's* new *Amvit Jointed Sewer Pipe* for the job.

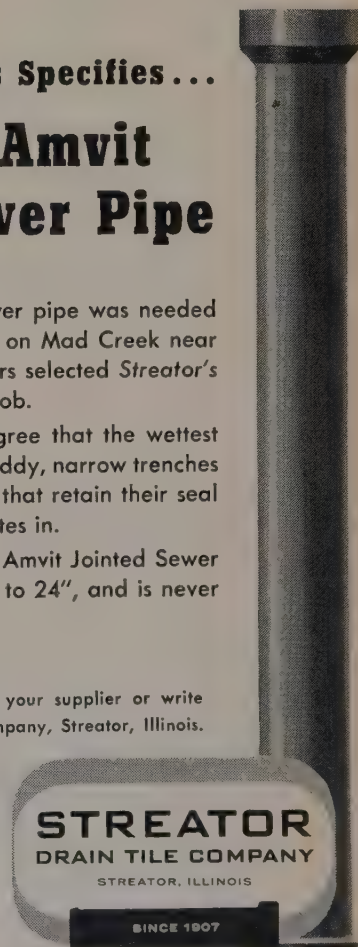
Contractors and engineers today agree that the wettest jobs—high ground water levels, and muddy, narrow trenches—demand completely watertight joints that retain their seal in keeping ground waters out and wastes in.

Streator's root-and-infiltration-proof *Amvit Jointed Sewer Pipe* is available in diameters from 4" to 24", and is never more than 24 hours distant.

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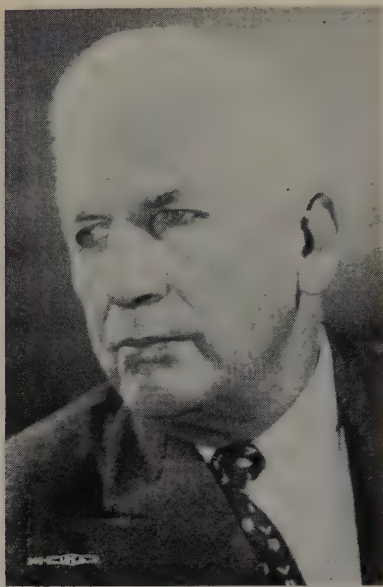
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EVERETT McKINLEY DIRKSEN,
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John William Chapman,
Lieutenant Governor



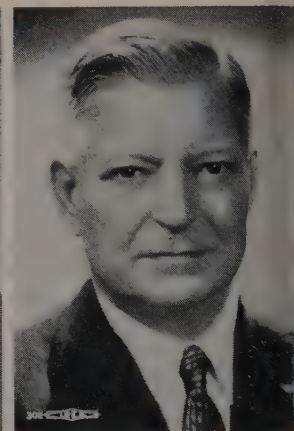
Charles F. Carpentier,
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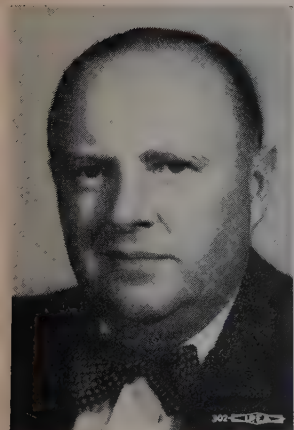
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Joseph D. Lohman,
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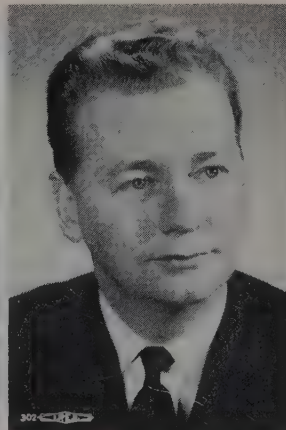
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Attorney General



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President Pro Tempore
of Senate



Paul Powell,
Speaker of House



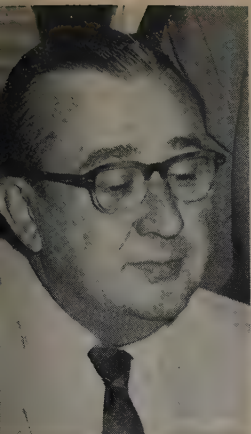
William G. Clark,
Majority Leader of
House



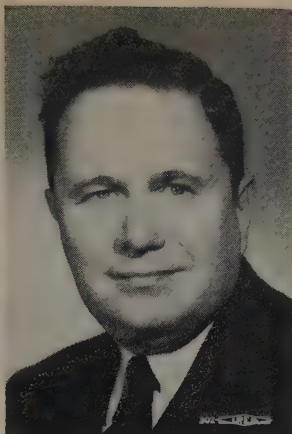
Warren L. Wood,
Minority Leader of
House



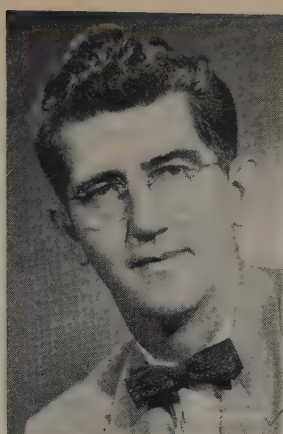
Donald J. O'Brien,
Senate Minority Leader



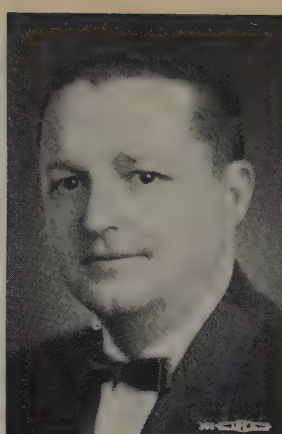
Ass't Senate Majority
Leader George E. Drach



Ass't Senate Minority
Leader James Gray



G. William Horsley,
State Representative,
Sangamon County

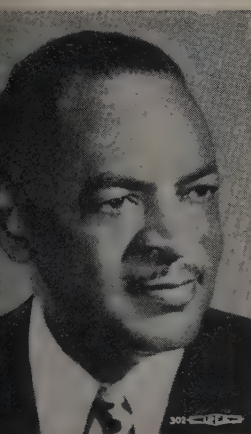


Allen T. Lucas,
State Representative,
Sangamon County

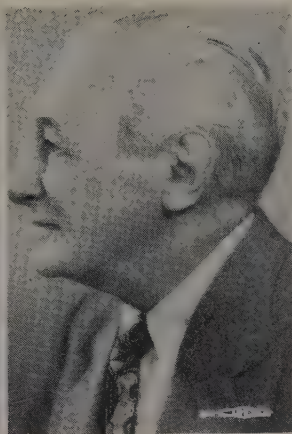


Director Vera M. Binks,
Dept. Registration and
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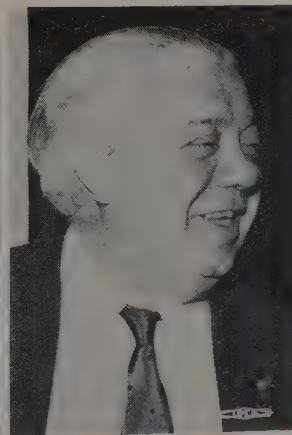
E. J. Derwinski,
4th District



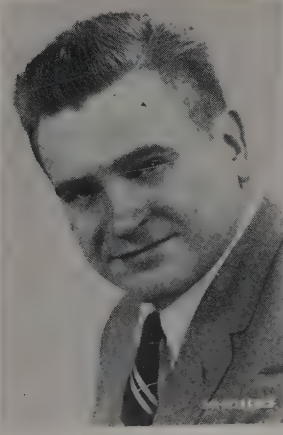
J. C. Kluczynski,
5th District



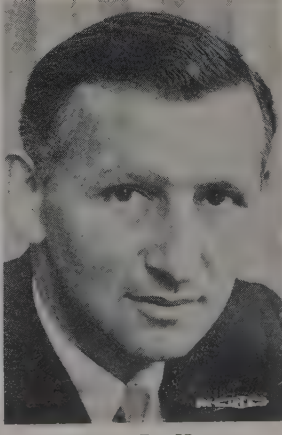
Thomas J. O'Brien,
6th District



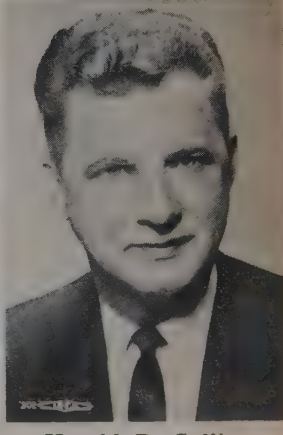
R. V. Libonati,
7th District



David D. Rostenkowski,
8th District



Sidney R. Yates,
9th District



Harold R. Collier,
10th District

Wednesday, May 4

- 2:00 p.m. DIAMOND JUBILEE EXPOSITION Begins—State Armory, open continuously to 10:00 p.m.
- 7:00 p.m. REGISTRATION—St. Nicholas Hotel Lobby to 10:00 p.m.

Thursday, May 5

- 8:30 a.m. REGISTRATION — St. Nicholas Hotel Lobby
- 9:30 a.m. BOARD OF DIRECTORS MEETING—Coral Room—Society members welcome to attend
Presiding—Donald S. Magowan, President, ISPE
- 10:30 a.m. DIAMOND JUBILEE EXPOSITION — State Armory — open to 10:00 p.m.
- 12:00 noon LUNCHEON—Ball Room
Presiding—Frank Edwards, Past President, ISPE
Invocation—Monsignor Alphonse Bertman
Welcome—Mayor of Springfield, Lester E. Collins
Speaker—Robert Ruthrauff, Manager of Applied Programming, International Business machines, Chicago; Subject, "Future Uses of Computers in Design and Simulation."
- 2:00 p.m. BOARD OF DIRECTORS MEETING—Coral Room
- 2:00 p.m. FUNCTIONAL SECTION MEETINGS
to Industry—Ball Room—Royce Johnson, Acting Chairman
- 4:30 p.m. Highways—Springfield Room—Floyd Birt, Chairman
Private Practice — Executive Room — J. D. Voorhees, Acting Chairman
Surveyors—Ball Room—Arnold Lundgren, Acting Chairman
Structural—Dome Room—Roland Olson, Chairman
Building Consultants—Organizational Meeting—Ball Room
- 5:30 p.m. COCKTAIL HOUR — Springfield Room
Sponsored by Illinois Concrete Pipe Manufacturers Association
- 6:30 p.m. BUFFET DINNER—Ball Room
MILLIONAIRE PARTY—Ball Room

Friday, May 6

- 8:30 a.m. REGISTRATION—St. Nicholas Hotel Lobby
- 8:30 a.m. 75TH ANNUAL MEETING—Springfield Room
Presiding—Donald S. Magowan, President, ISPE
- 10:00 a.m. COFFEE BREAK—Coral Room
- 10:30 a.m. DIAMOND JUBILEE EXPOSITION—State Armory—open to 10:00 p.m.
- 12:00 noon LUNCHEON—Ball Room
Presiding—L. D. Hudson, President-Elect, ISPE
Invocation—Rabbi Meyer Abramowitz
Speaker—Harold Mosher, President, NSPE; Topic, "America's Future and the Role of the Engineering Profession"
- 2:30 p.m. ANNUAL MEETING—Ball Room
Presiding—Donald S. Magowan, President, ISPE
Speaker—Paul H. Robbins, Executive Secretary, NSPE; Subject, "Quo Vadis—Where Are You Going?"
- 4:00 p.m. LEGISLATIVE SESSION—Ball Room
Presiding—George Farnsworth, Chairman, Legislative Committee
Speakers—Paul Gordon, Jr. and C. K. Willett
- 6:00 p.m. COCKTAIL HOUR — Springfield Room — Sponsored by Streator Drain Tile Company and American Vitrified Products Company
- 7:00 p.m. 75th ANNUAL BANQUET (Dress Optional)—Ball Room
Presiding—Donald S. Magowan, President, ISPE
Invocation—The Very Reverend Edmond Ringland
Presentation of the Illinois Award
Presentation of Past Presidents Certificate
Speaker—Robert E. Merriam, Deputy Assistant to the President of the United States; Subject, "What Is America's Defense Posture for the '60's?"
- 10:00 p.m. DANCE—Ball Room—Music by Charles Rodgers Orchestra

Saturday, May 7

- 8:30 a.m. ORGANIZATION OF 76th ISPE BOARD OF DIRECTORS—Springfield Room—Society members welcome to attend
- 9:00 a.m. STATE COMMITTEE MEETINGS—Dome Room and 433-439
- 10:30 a.m. DIAMOND JUBILEE EXPOSITION—State Armory—open to 10:00 p.m.

ILLINOIS MEMBERS OF CONGRESS



Roman C. Pacinski,
11th District



Charles A. Boyle
(deceased),
12th District



Marguerite Stitt Church,
13th District



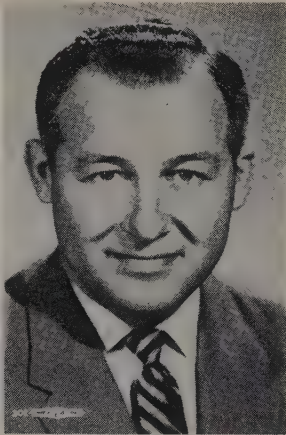
Elmer Hoffman,
14th District



Noah M. Mason,
15th District



Leo E. Allen,
16th District



Leslie C. Arends,
17th District



Robert H. Michel,
18th District



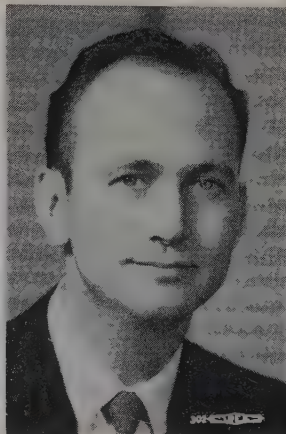
Robert Chipfield,
19th District



Edna Simpson (Mrs. Sid)
20th District



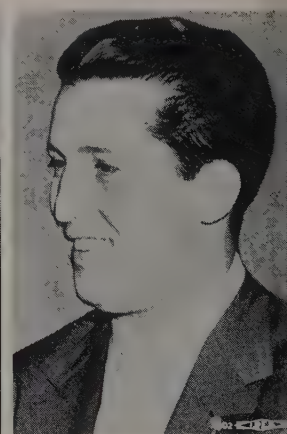
Peter F. Mack,
21st District



William L. Springer,
22nd District



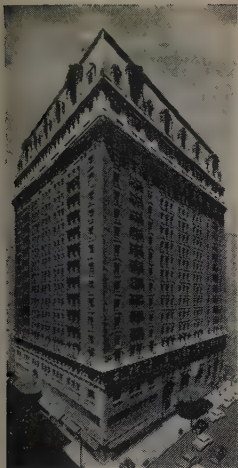
George Shipley,
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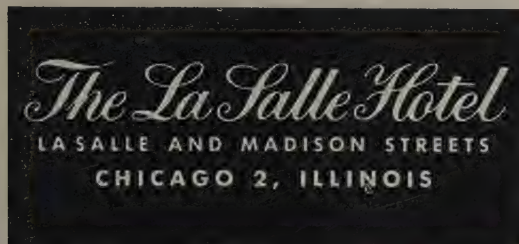
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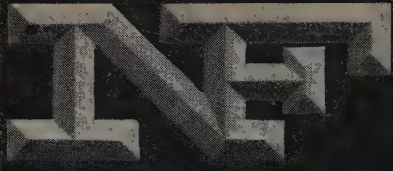
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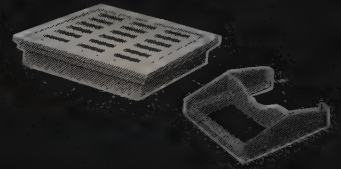
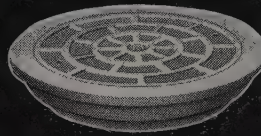
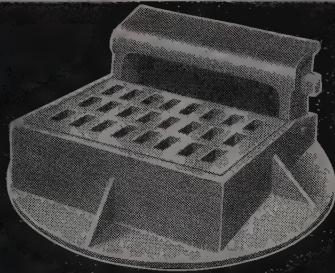
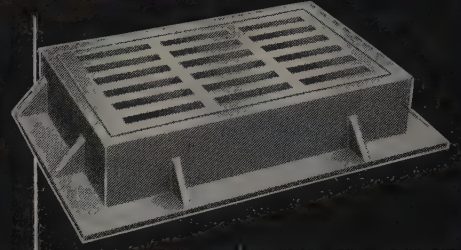
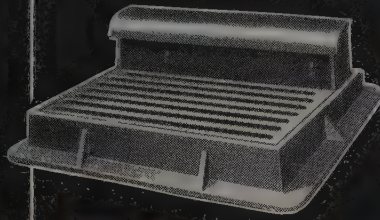
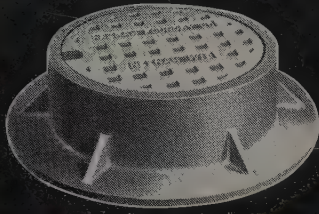
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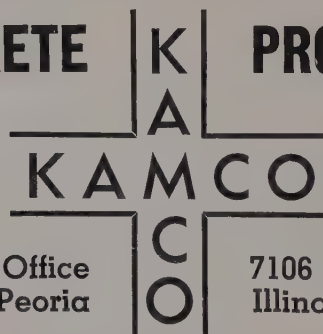
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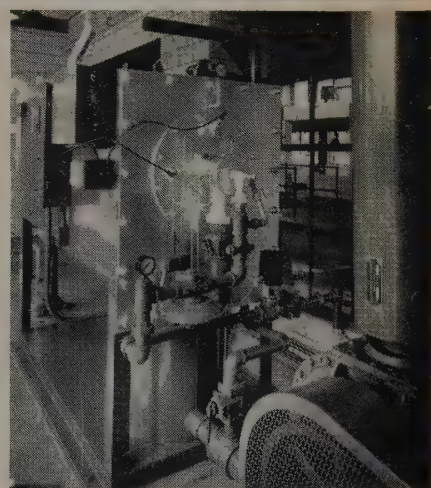
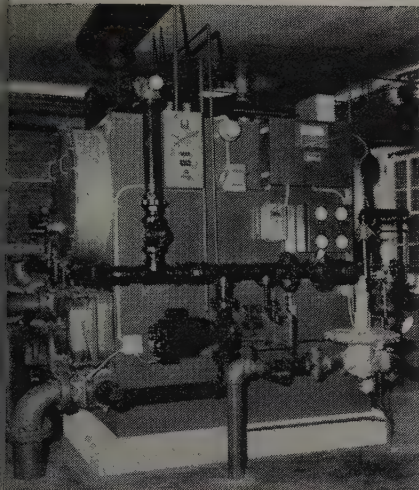
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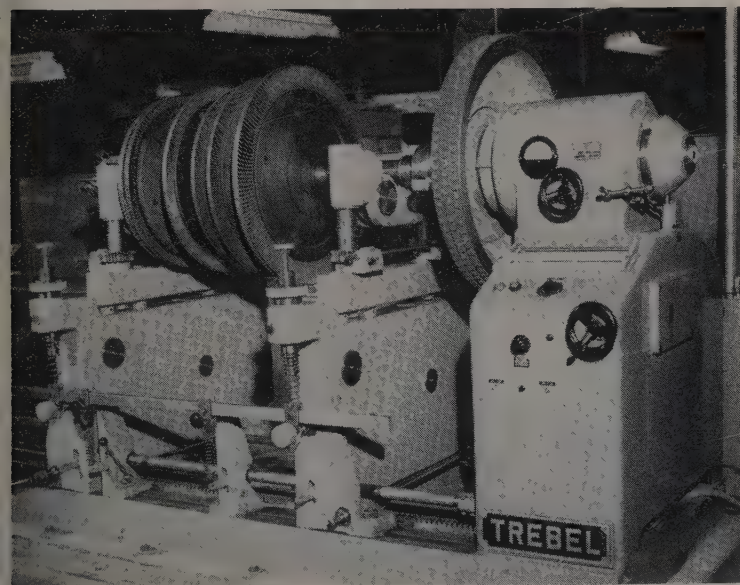
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Left—HEATX, digester sludge heater at Urbana-
Champaign; Wilson & Anderson, Consulting Engrs.
Top—Rectangular Collectors at Morris; Baxter &
Woodman, Consulting Engrs.
Right—CARBALL, CO₂ producer at Moline;
Greeley & Hanson, Consulting Engrs.*

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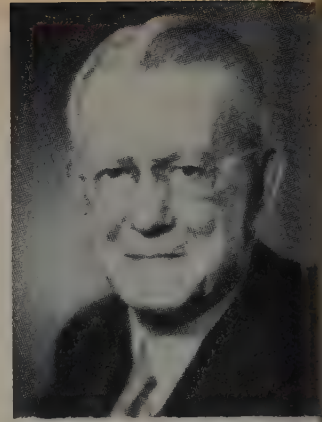
I. O. Baker, 1886-87



Prof. A. N. Talbot, 1890-91



Samuel S. Greeley, 1892-93



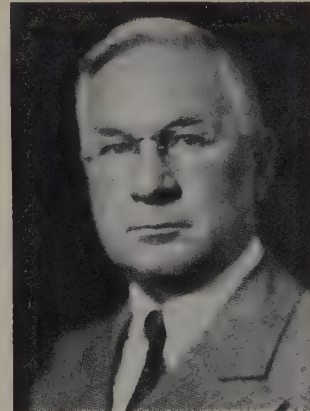
Daniel W. Meade, 1894-95



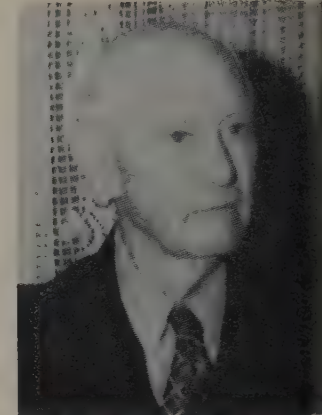
John W. Alvord, 1903-04



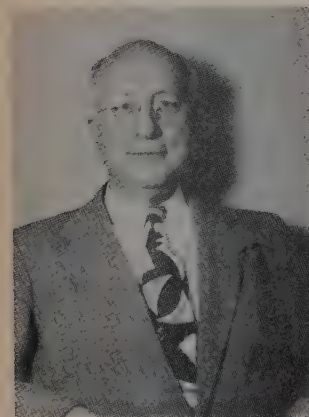
John B. Hittell, 1909



Paul Hansen, 1916



J. W. Dappert, 1919



H. E. Babbitt, 1923



E. E. R. Tratman, 1924



J. J. Woltmann, 1926



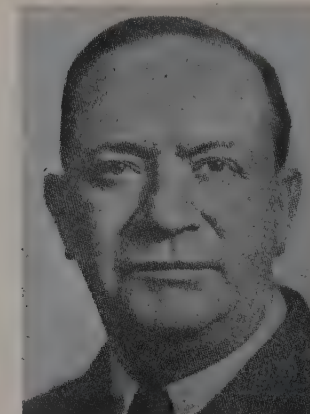
W. D. P. Warren, 1927



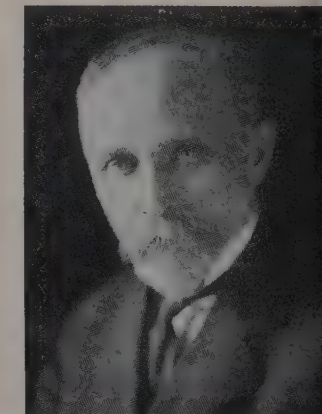
Melvin L. Enger, 1929



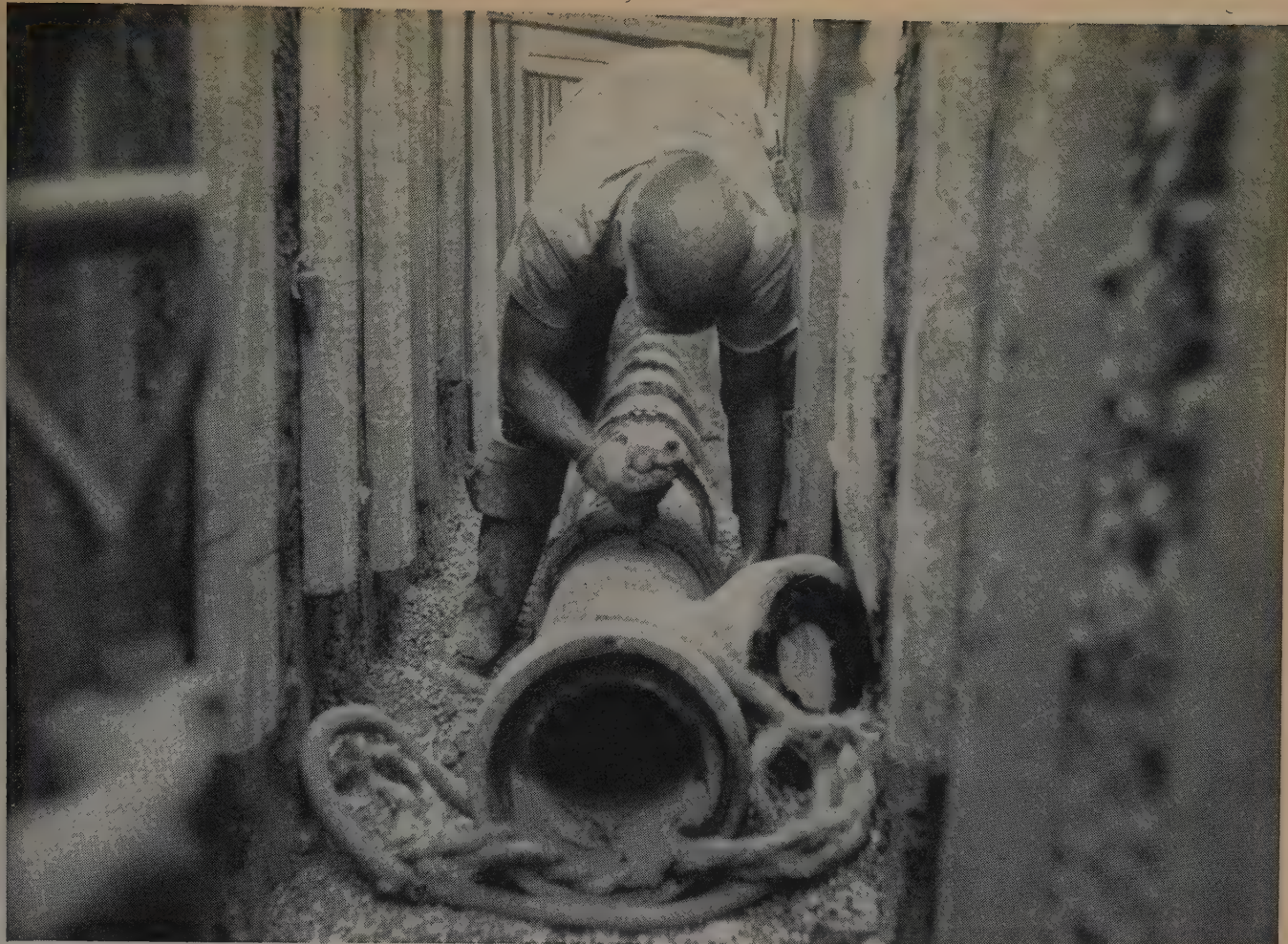
G. W. Pickels, 1935



Paul E. Green, 1936



W. D. Jones, 1937



Thirty more miles of concrete pipe were added to Milwaukee's sewer system in 1957, most of it 8" I.D.

In Milwaukee... **the entire residential sewer system** **is concrete pipe**

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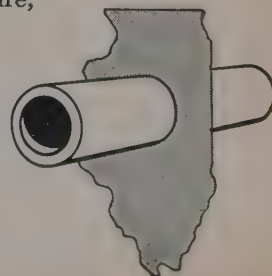
Milwaukee chose concrete pipe be-

cause it meets the requirements of uniformity of strength—strength to carry all the loads—durability, availability and low initial cost.

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J. Dixon Voorhees Discusses Lethargy of—and Improvement for—the Private Practice Functional Section



J. D. Voorhees

about the author

J. D. Voorhees, P.E., joined ISPE in 1946. After serving in every elective office of the Madison County Chapter, he was elected to the ISPE State Board of Direction in 1956 where he has served on many committees. Since 1950, he has served continuously as ISPE Representative to the Illinois Engineering Council, and he has been chairman of the ISPE Representatives to the Council for the years 1957, 1958 and 1959. A registered professional and structural engineer, he is owner of The Voorhees Company, Engineers, with headquarters in Alton. Voorhees has been active in civic affairs, including the Boy Scouts of America.

Voorhees was one of the founders of the Illinois Association of Consulting Engineers, an organization composed of owners of engineering firms in private practice. The IACE is affiliated with the Consulting Engineers' Council, a national organization representing primarily the owners of consulting firms.

At the 1958 Annual Meeting, Voorhees was elected Chairman of the ISPE Functional Section for Consulting Engineers in Private Practice. Bylaws of this Functional Section limit membership "to any member of ISPE whose principal business is as a consultant in private practice or as a full time employee of such a consultant." Bylaws state that the "object of this section is to provide an effective forum for discussion and action by consulting engineers in private practice."

In the article which follows, Voorhees gives his views of this Functional Section.

There has been a lack of interest in our ISPE Functional Section for Engineers in Private Practice. Bylaws for this Functional Section have been approved by the Board of Directors and are fully effective.

This inactivity may be due to several reasons, among which are the following:

1. Lack of a clear understanding of the purpose of the Functional Section organization.
2. Doubt as to the effectiveness of the Functional Section.
3. Apathy on the part of members who should be enthusiastic about the possibilities of this Functional Section.

Since the Private Practice Functional Section at the national level is active and alive, there is every reason to believe that our ISPE Private Practice Functional Section could be active. The following suggestions might point the way to restoring interest and revitalizing this functional section:

1. Mail a copy of the Functional Section Bylaws to each ISPE member in private practice.
2. Invite each ISPE member in private practice to suggest subjects for action by the Private Practice Functional Section.
3. Get a definite commitment from enough members in private practice, who have the interest and time, to constitute a slate of officers for the Functional Section. These members shall preferably not be members of the Illinois Association of Consulting Engineers, since this organization is providing for the functional needs of its members.
4. When the Functional Section is reorganized, dues should be determined, specific dates and places for section meetings should be set, and stimulating action spearheaded by dynamic leadership.

Floyd D. Birt Urges Study of Needs for All P.E.'s in Profession of Highway Engineering

Officers for the Highway Functional Section have held three meetings since the Annual Meeting in Rockford last May. These are the officers who are working out the problems involved in formal organization of this new functional section:

Chairman—Floyd D. Birt, Owner, Edinburg Quarries.

Vice Chairman in State or Federal Government—Norman H. Gundrum, U. S. Bureau of Public Roads.

Vice Chairman in State or Federal Government—Irwin C. Bliss, District VII Engineer, State Division of Highways.

Vice Chairman in County or City Employ—Devereaux H. Murphy, Superintendent of Highways, St. Clair County.

Vice Chairman in Contracting or Materials—Allen Osterling, Portland Cement Association, Springfield.

Vice Chairman in Education—Ellis Danner, Professor of Highway Engineering, University of Illinois.

Vice Chairman in Consulting—Gilbert D. Henning, Warren & Van Praag, Consultants.

Secretary-Treasurer—Noel F. Thomas, District I Field Engineer, State Division of Highways.

about the author

Floyd D. Birt, P.E., graduated from Missouri School of Mines in 1932. He became interested in ISPE in 1938 when he realized the importance of professional attitudes for engineers irrespective of employment. He deplores the apathy of P.E.'s who don't accept responsibility and who leave all leadership to those in consulting. As a principal in construction and material supply (he is owner of Edinburg Quarries near Decatur), Floyd considers himself among the large group of engineers who should do more to study and work out an understanding of common problems which face all engineers involved in highway construction.

The Highway Functional Section in Illinois differs from the NSPE setup where the functional section for engineers in government would enfold most of the members interested in the ISPE Highway Section. The ISPE Highway Functional Section was organized for the purposes and ideals in which engineers like Birt believe. This Section's bylaws are unique in that they provide for leadership primarily by engineers in government (Federal, State, County and/or Municipal engineers in highway engineering). However, they make provision for representation of engineers in (1) highway education, (2) consulting, and (3) contracting or highway materials supplying.

Despite an automobile accident early last summer, Floyd has worked patiently and diligently with his committee of which he is justly proud.

SPECIAL FUNCTIONAL MEETINGS

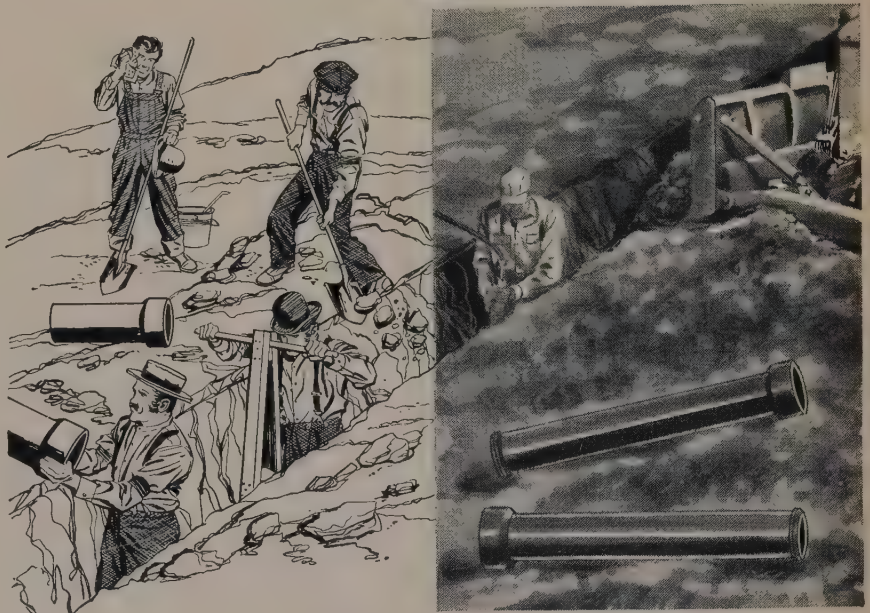
A group of Engineers interested in the Building Construction Consulting Field will hold a special meeting for the purpose of organizing a separate functional section. The group will meet Thursday afternoon, May 5, in the Ballroom of the St. Nicholas Hotel during the Convention. Such a section would likely consider affiliation with the newly formed Illinois Building Industry Alliance.

The Highway functional section has outlined a specific program at the Convention which will be of interest to all Highway Department Engineers. The group will study and plan a program to revise the salary schedule of Engineers in the Division of Highways. At the same time consideration will be given to ways and means of projecting better salaries for City Engineers and County Highway Engineers. All persons interested are urged to attend the meeting Thursday afternoon, May 5, in the Springfield Room of the St. Nicholas Hotel.

The Assistant Secretary-Treasurer who, with other officers, was elected at the last Annual Meeting of ISPE, was the late Oscar Frost, District IV Engineer of Local Roads and Streets.

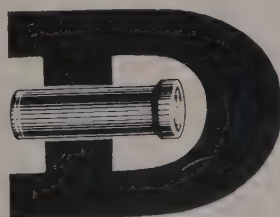
On first impulse this Section's leadership suggested the development of strong programs and vigorous action. More serious thought has resulted in the careful consideration of the professional needs of every engineer whose career is highway engineering. A spirit of professional respect has been kindled and the result aims to the over-all good of professional and structural engineers concerned with highway engineering in Illinois.

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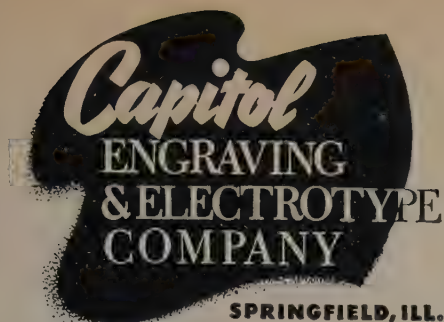
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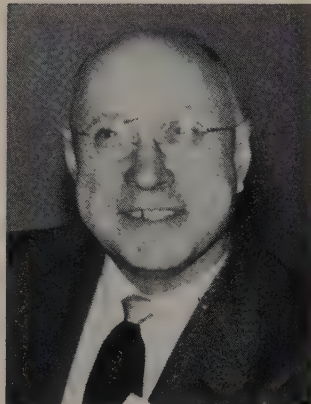
Alex Van Praag, Jr., 1942



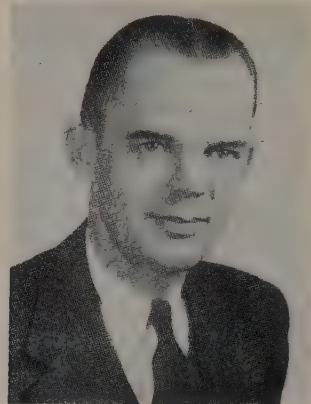
W. W. Wallace, 1943



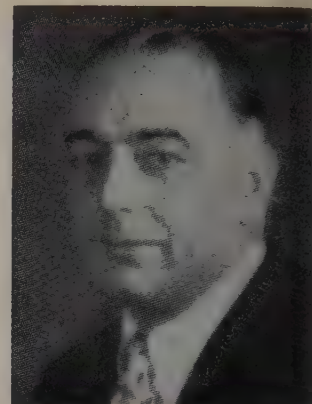
J. H. Morgan, 1944



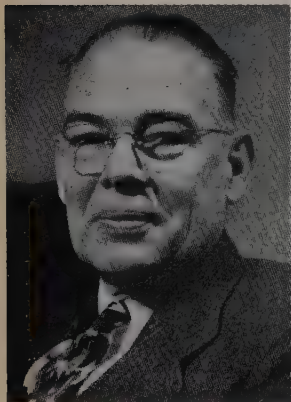
C. J. McLean, 1945



G. H. Anderson, 1946



D. M. Campbell, 1947



Earl C. Cooper, 1948



J. W. Whalen, 1949



George E. Ekblaw, 1950



Virgil Gunlock, 1951



A. D. Spicer, 1952

C. G. Elliott, 1888-89
Charles C. Stowell, 1896-97
A. D. Thompson, 1898-99
Charles Carroll Brown, 1900
Henry G. Paddock, 1901-02
Dabney H. Maury, 1905-06
Charles B. Burdick, 1907-08

A. N. Johnson, 1910
J. G. Gabelman, 1911
J. A. Harman, 1912
L. K. Sherman, 1913
J. J. Harman, 1914
W. S. Shields, 1915
W. D. Gerber, 1917

J. G. Melliush, 1918
F. C. Lohmann, 1920
S. A. Greeley, 1921
R. I. Randolph, 1922
A. L. Webster, 1925
J. A. Moore, 1928
A. J. Schafmayer, 1930

H. J. Ferguson, 1931
H. J. Fixmer, 1932
M. L. Greeley, 1933
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L. D. Gayton, 1940
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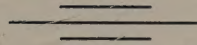
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Full name Daniel W Mead
 Day and year of birth March 6th 1862
 Present residence Rockford Ill.
 Present occupation City Engineer
 Nature and extent of professional service Graduate of Cornell University as Civil Engineer. one year as Topographer U.S.A.S. 1 1/2 years as City Engineer

I desire to become a member of the ILLINOIS SOCIETY OF ENGINEERS AND SURVEYORS, and, if elected, I will endeavor to forward the interests of the Society.

Daniel W Mead
 Dated at Rockford Ill. Jan 17th 1887
 Approved by Executive Board.

C. G. Elliott
Chairman

ILLINOIS SOCIETY OF ENGINEERS AND SURVEYORS.

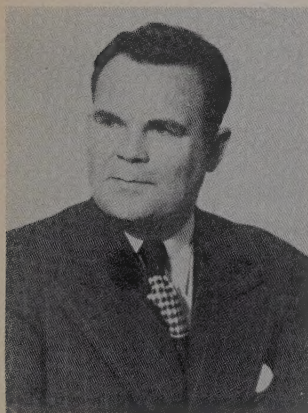
Application for Membership.

Full name Samuel Sewall Greeley
 Day and year of birth October 11th 1824
 Present residence 66 Bellum Place Chicago
 Present occupation Surveyor & Civil Engineer
 Nature and extent of professional service Asst. Engineer on Boston Water Works 1846 to 1848 on Rutland & Bennington R.R. in Vermont 1848 to 1850 on Orange & Alexandria R.R. Virginia 1850 to 1851 Surveyor & Engineer in Chicago since 1853

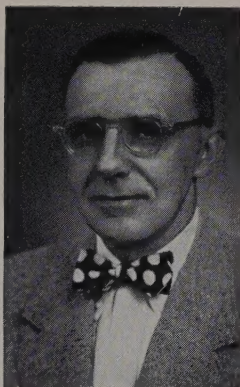
I desire to become a member of the ILLINOIS SOCIETY OF ENGINEERS AND SURVEYORS, and, if elected, I will endeavor to forward the interests of the Society.

Samuel S Greeley
 Dated at Chicago Dec 13 1886
 Approved by Executive Board.

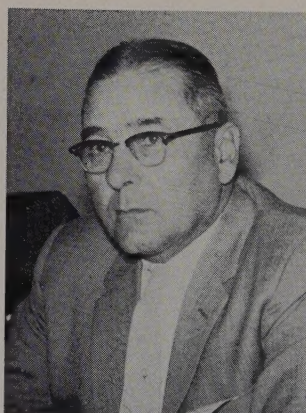
C. G. Elliott
J. O. Baker



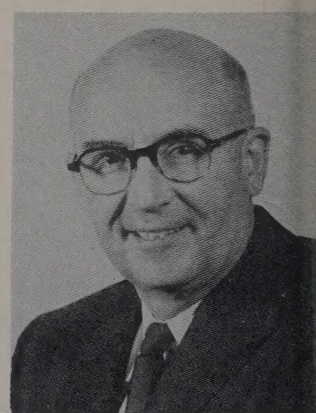
Ray G. Brichler, 1953



C. W. Klassen, 1954



Dwain M. Wallace, 1955



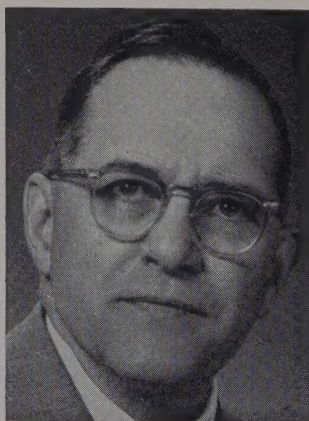
Royce E. Johnson, 1956



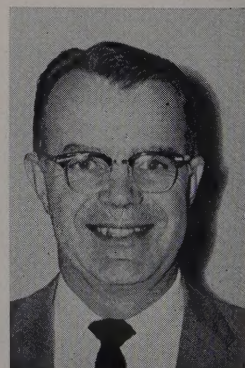
A. W. Neurether, 1957



Frank Edwards, 1958



D. S. Magowan, 1959



L. D. Hudson, 1960

Independent Tests Show:

Flow characteristics of AMVIT clay pipe permit efficient, lowest cost-in-place sewer design

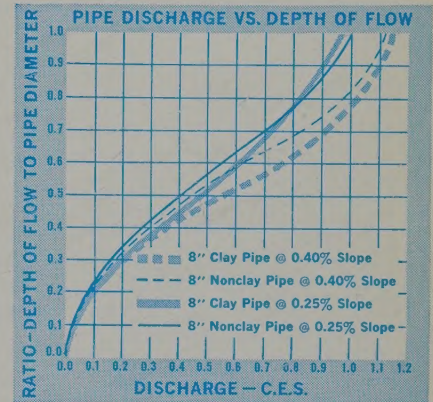
There is no difference in value of Kutter's "n" between different types of pipe materials

There have been many claims and counter-claims dealing with the "n" factor in the Manning approximation of the Kutter formula relating to the flow-coefficient of friction of various types of piping materials.

For many years, sewer designers have used the "n" factor of .013 in the design of sanitary sewer systems involving vitrified clay pipe. Recently, the manufacturers of substitute non-clay materials have claimed that the "n" factor for their product is less than .013, usually claiming it is .010.

This supposed difference in "n" factor has been used in the promotion of these substitute materials on the basis that, since their product has a supposedly lower "n" factor, designers must use a different design criteria for clay pipe. *This is only sales promotion talk.*

Studies at the University of Iowa and at Ohio State University have proven that there is essentially NO difference in the value of Kutter's "n" between different types of pipe materials regardless of pipe lengths, type of joints or any other consideration.



This graph shows discharge versus depth of flow.

In normal service a slime coating will be built up on the interior surface of the pipe. Therefore, the friction factor depends upon the relative smoothness of the slime surface and not upon the pipe material itself. Clay pipe is the only pipe material that will resist the corrosive action of the acid laden slime.

Don't be misled by exaggerated claims. For more information on this vital subject, or for complete data on how we can help you cut sewer project costs, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.

SALES OFFICES:

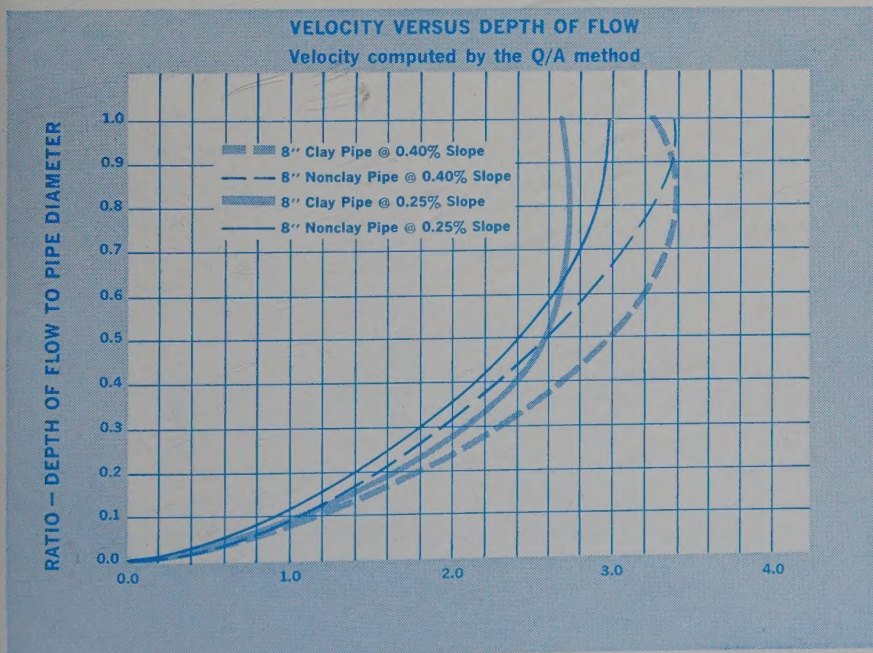
Cleveland	TO 1-6750	Los Angeles	EL 9-4535
Chicago	ST 2-5243	Milwaukee	HO 6-4990
Detroit	GA 1-1940	St. Louis	HA 9-5400

SINCE 1848




**American Vitrified
Products Company**

CLEVELAND, OHIO



This graph shows velocity as related to depth of flow.

Plants Across the Nation . . . Brazil, Indiana • Chicago, Illinois • Cleveland, Ohio • Crawfordsville, Indiana • Detroit, Michigan • East Liverpool, Ohio • Grand Ledge, Michigan • Lisbon, Ohio • Los Angeles, California • Milwaukee, Wisconsin • South Bend, Indiana • St. Louis, Missouri • Whitehall, Illinois • Somerville, New Jersey (Completion early 1960)



FOR HIGHWAYS WITH
A SOLID FUTURE

Concrete

CONCRETE will save taxpayers \$2,835,000 on the first 39 miles of North Dakota's Interstate 94!

North Dakota chose concrete to get the big savings where they count most—on upkeep

On the 39-mile stretch between Jamestown and Valley City—and for other sections of the Interstate System—North Dakota had good reasons for choosing concrete. *Concrete means tax savings and real dollar value.*

In North Dakota it was found that by comparing amortized first costs plus surface maintenance costs for concrete and asphalt, *concrete will save \$72,200 per mile in 35 years.*

Estimates were based on maintenance costs shown in an official study of pavements in 28 reporting states. And because the asphalt design being considered would require two resurfacings, this cost was figured in, too. Bureau of Public Roads life expectancy studies gave the schedule for such resurfacings. Final figures evidenced impressively the siz-

able year-after-year savings provided by concrete!

The reasons are simple enough! Concrete needs no special seal coatings, no periodic resurfacings—both costly items. There's far less routine maintenance, too.

Concrete is nonflexible . . . it has *beam* strength it never loses. In fact, concrete grows stronger year by year. Modern, air-entrained concrete gives built-in protection against damage caused by freezing and thawing.

Concrete highways 35 years old are a matter of record. Today's modern concrete promises 50 years and more of smooth going for drivers. Thrifty concrete on the Interstate System leaves more funds for other highways. Concrete means true economy for taxpayers, both today and in the future. It's easy to see why concrete is the preferred pavement for important highways.

PORTLAND CEMENT ASSOCIATION

111 W. Washington St., Chicago 2, Ill.

A national organization to improve and extend the uses of concrete